January 16, 2002

MODIS sensor Working Group (MsWG) Summary

Attendance: Bill Barnes, Roger Drake, Eddie Kearns, Gary Toller, Jack Xiong, Eric Vermote, Zhengming Wan, Joe Esposito

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Scheduled Items

Item 1. Jack Xiong – Mirror side degradation and MODIS visible bands RVS related issues.

Trending of m_1 shows a flattening of the mirror degradation for both mirror sides. The fitted m_1 used in L1B are beginning to deviate from the truth since about mission day 620.

RD) What is the last date of the data used in fitting the m_1?

JX) Mission day 481 (2001115)
Results from the SRCA and Lunar calibrations are consistent with the m_1 trend.
RVS degradation – The RVS degradation, time and AOI dependency, is not corrected in the L1B process.

BB) The Miami analysis may be impacted be these effects. We should discuss with Miami the impact of these effects on their analysis and whether corrections for these effects should be applied during the next reprocessing of L1.

Item 2. Eddie Kearns - Time dependency of the RSB Mirror Side and RVS response

MODIS Hawaii data has been examined in response to MCST's recent RVS findings.

75 granules of MODIS data, with MOBY data on matching dates, were analyzed with clouds, glint, etc. removed. The water leaving radiance (nLw) of each granule is averaged across scan and normalized relative to pixel 500. "Waterfall" images were created for the ocean bands by stacking the average. The RVS appears to be changing with time in the 412nm image.

RD) Geo-physically, what leads us to not expecting this RVS trend.

EK) It could be due to biology at just 412nm but the same effect is indicated at higher wavelengths (e.g. 500nm).

JX) The right side of the image is consistent with the MCST RVS AOI dependency

BB) The image indicates a 50% nLw change over 2 years. Why hasn't this shown up much sooner?

EK) The TOA is roughly 6 time less. The MOBY average takes out nLw offset. We see the effect on new A-side easily. The new atmosphere correction may affect the result compared to earlier analysis.

EV) We do not know how much MOBY data is used to scale.

RD) I am concerned that the nLw image at 667nm changes more rapidly than expected.

EK) Noisy data due to limited statistics.

BB) Is the normalization affected by the glint?

EK) The normalization near the glint (several frames) is affected.

BB) Describe the parameter ε in the last image.

EK) ε is a measure of the amount of atmospheric correction is used in the blue relative to red. It depends upon atmospheric conditions, sun position, etc. We use ε=B(768nm)/B(865nm).

There is some mirror side banding in the older data. B-side is much better. The banding is mostly near the cross scan edges and glint regions. We have to straighten out how much atmospheric correction to apply. When $\varepsilon \neq 1$ across the scan then banding will occur.

JX) Different plots are needed to see RVS change as a function of time.

BB) With the MOBY data will you be able to go to smaller time periods?

EK) We get the shape for each epoch and extrapolate but it is difficult to extrapolate across instrument changes.

EV) There is a surface BRDF, which is important for MODIS analysis.

JX) What will you do for the new A-side data.

EK) The analysis will be started with the normalization at the break.

JX) MCST can make a smoothly changing m_1 with flatness as $m_1 = at + b$ with a=0.

RD) What kind of dn differences are associated with the percentages in the images? Wonder if what we are calling RVS may be due to an analysis offset?

EK) Changes in the 412nm may be mostly due to tweaking the atmospheric correction and not upon the instrument.

RD) When the calibration is done against MOBY, is it at one AOI.

EK) We get different angles. The averaging removes angle effects.

RD) The greatest change is at highest frame number.

JX) This is consistent with ~ 8% in MCST analysis at TOA.

BB) Wait until the reprocess of L1 for applying the new corrections. We could put in a correction before then for B3. Will speak with Vince on Thursday about B3.

Around the Table

Participant: JX – There are a number of issues to repair if we wish to in L1.

Participant: RD – Project telecon late this/early next week. January 26th is the tentative shipping date.

Participant: JX) – Wants change to B5 gain done pre-launch in FM1 per SP's request.
RD) The change has been made.